

Fiery end feared for Top End's favourite hopper

A colourful grasshopper – which has become a symbol of the Kakadu area of Australia's wet-dry tropics – could be endangered by the fire management practices in northern national parks, according to a CSIRO researcher.

Leichardt's grasshopper (*Petasidea ephippigera*) is a spectacular orange, black and blue insect about six centimetres long which is often used in publicity material for the Northern Territory and was the subject of an Australian postage stamp in 1991.

The grasshopper is dependent on aromatic shrubs of the genus *Pityrodia*, on which it lives and feeds. A preliminary study by Lyn Lowe, from the CSIRO's Tropical Ecosystems Research Centre in Darwin, has shown that when *Pityrodia* is burned, the grasshoppers do not return for at least four years. Yet at present, nearly all parts of Kakadu and Keep River – the two Northern Territory national parks which contain the only known populations of Leichardt's grasshopper – are burned every few years to prevent large scale uncontrolled fires from entering the parks.

Pityrodia has a patchy distribution, growing along drainage lines on exposed sandstone and in sandy areas. Although the shrubs grow on escarpment areas throughout the Northern Territory, Leichardt's grasshopper has only been found in the two national parks which are about 400 kilometres apart. The grasshoppers hatch in March and April

(early in the dry season) and the wingless nymphs attach themselves to a plant. They only leave the shrub on which they grow in the next January or February, as an adult after mating and just before they die.

The prescribed burning, which is carried out between May and July, catches the grasshoppers at the nymph stage. Those that do not perish during the burn, generally starve, Lowe found. Without wings, the grasshopper nymphs do not have the capacity to disperse and find another food plant. Although *Pityrodia* regenerates within three or four weeks, it is too late to prevent local extinction of the grasshopper. This is exactly what happened at four out of the five sites examined by Lowe in 1992. None of these four sites has been recolonised since. Lowe says that because the grasshoppers are sensitive to fire, special care must be taken with fire management. It may be possible to burn around the known populations to protect them from late, dry-season fires.

As with other brightly coloured insects, it is assumed that the adult grasshoppers are conspicuous to advertise to potential predators that they are toxic or taste bad. In fact, there is only one report of the grasshopper being eaten by predators.

A team led by Professor Bill Pickering of the Chemistry Department at the University of Queensland is studying the



Leichardt's grasshopper

chemical makeup of the body fluids of Leichardt's grasshopper to try to narrow down a candidate toxin. One possibility is that the insect ingests and concentrates a compound from *Pityrodia*.

Further studies need to be undertaken to ensure the survival of Leichardt's grasshopper, Lowe says. She would like to establish long term monitoring of several populations, some protected and some susceptible to fire. If populations were to become locally extinct during the study, they could be replaced by introducing breeding individuals from elsewhere.

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Tim Thwaites

Stormwater: finding out who cares

FOR THE PAST two years, the Australian Research Centre for Water in Society, part of CSIRO's Division of Water Resources at Perth, has been studying the thorny issue of stormwater management.

In August 1995, the centre produced a report titled *Stormwater Management in Australia: Community perceptions, attitudes and knowledge*. This presented the findings of surveys in Melbourne, Brisbane, Perth and Sydney, designed to gauge community attitudes to stormwater. The surveys questioned people's awareness of stormwater as a pollutant, their perceptions of the importance of stormwater management, who they felt should be responsible for its management, and their 'willingness to pay' for such services.

The second phase of the research has involved setting up Community Catchment Care Groups in the four cities. The aim of this study is to investigate the feasibility of community involvement in stormwater management. Each of the catchment groups involves

1000-1500 residences. Businesses, water authorities, councils, schools and community groups have also become involved.

'We wrote to almost every person in the catchment and told them about the study, offering them the opportunity to become involved at different levels,' says Blair Nancarrow, a researcher at the centre. 'We will work for nine months with each group, then transfer support to local government or environmental agencies, or water authorities.'

The centre is conducting surveys to measure people's knowledge and attitudes to the issue, and whether this changes over time in response to the community activity in their area. Information gathered on the logistics and functioning of small community groups in relation to stormwater management will contribute to recommendations for national guidelines.

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